ATTACHMENT 3-5

BUDGETARY QUOTATIONS FROM EQUIPMENT MANUFACTURERS

COVER SHEET

ENGELHARD

101 WOOD AVENUE
ISELIN, NJ 08830
732-205-6000

POWER GENERATION SALES:
ENGELHARD CORPORATION
2205 CHEQUERS COURT
BEL AIR, MD 21015
PHONE 410-569-0297
FAX 410-569-1841
E-Mail Fred_Booth@ENGELHARD.COM

DATE:	**April 26, 1999**	**NO. PAGES**	**4**	**(INCLUDING COVER)**

TO: **RAYTHEON** **FAX 609-720-2384**
ATTN: Mike Radovich

ENGELHARD
ATTN: Nancy Ellison

FROM: **Fred Booth** **Ph 410-569-0297 // FAX 410-569-1841**

RE: **Allegheny Power**
Simple Cycle Project
Camet® CO and NOxCAT™ ZNX™ SCR Catalyst Systems
Engelhard Budgetary Proposal EPB99395

Dear Mr. Radovich,

We provide Engelhard Budgetary Proposal EPB99395 for Engelhard Camet® CO and NOxCAT™ ZNX™ High Temperature SCR Catalyst systems. This is per our phone conversation and your FAXed request of April23, 1999.

Our Proposal is based on:

- CO Catalyst for 80% CO reduction;
- SCR Catalyst for 65% NOx reduction with ammonia slip of 10 ppmvd @ 15% O_2;
- Scope as noted;
- 4"WG Pressure Drop across catalysts;

We request the opportunity to work with you on this project.

Sincerely yours,

ENGELHARD CORPORATION

Frederick A. Booth
Senior Sales Engineer

Nancy Ellison - Proposal Administrator

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Raytheon – Allegheny Power
Simple Cycle Cycle Project
CO and SCR Catalyst Systems
Engelhard Budgetary Proposal EP999396
April 26, 1999

ENGELHARD CORPORATION
CAMET® CO CATALYST SYSTEM
NOxCAT™ ZNX™ SCR NOx ABATEMENT CATALYST SYSTEM

Engelhard Corporation ("Engelhard") offers to supply to Buyer the Camet® metal substrate CO System and NOxCAT™ zNX™ ceramic substrate SCR systems summarized per the technical data and site conditions provided.

Scope of Supply

1. Engelhard Camet® CO catalyst in modules with internal support frame;
2. Engelhard NOxCAT™ ZNX™ SCR catalyst in modules with internal support frame;
3. Duct Section – Internally insulated - to house CO Catalyst, AIG, and SCR Catalysts;
4. Ammonia Delivery System Components - 28% aqueous ammonia to skid

BUDGET PRICES: Per Turbine	CO System		SCR System
	$350,000		$1,030,000
Replacement CO Catalyst	$250,000	Replacement SCR Catalyst	$ 600,000

WARRANTY AND GUARANTEE:

Mechanical Warranty:	One year of operation* or 1.5 years after catalyst delivery, whichever occurs first.
Performance Guarantee:	Three (3) years of operation* or 3.5 years after catalyst delivery, whichever occurs first. Catalyst warranty is prorated over the guaranteed life.
	Expected Life 5 - 7 years

SCR SYSTEM DESIGN BASIS:

Gas Flow from:	LM6000 Combustion Turbine
Gas Flow:	Horizontal
Fuel:	Natural Gas & Oil
Gas Flow Rate (At catalyst face):	See Performance data - Designed for Gas Velocities within ±15% at the reactor inlet
Temperature (At catalyst face):	Designed for Gas Temperatures must be within ±20°F at the reactor inlet
CO Inlet (At catalyst face):	See Performance Data
CO Reduction	80%
NOx Inlet (At catalyst face):	25 ppmvd @ 15% O_2
NOx Reduction :	65%
NH_3 Slip:	10 ppmvd @ 15%O_2
Pressure Drop:	4"WG – Nom.

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Raytheon – Allegheny Power
Simple Cycle Cycle Project
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April 26, 1999

Performance Data

GIVEN / CALCULATED DATA			
	FUEL	NG	Oil
TURBINE EXHAUST FLOW, lb/hr		973,080	975,240
TURBINE EXHAUST GAS ANALYSIS, % WT.	N2	72.31	71.92
	O2	16.33	15.26
	CO2	4.89	6.46
	H2O	6.24	5.13
	Ar	1.23	1.23
TURBINE EXHAUST GAS ANALYSIS, % VOL.	N2	72.74	73.21
	O2	13.50	13.60
	CO2	3.13	4.19
	H2O	9.75	8.12
	Ar	0.87	0.88
GIVEN: TURBINE CO, ppmvd@ 15%O2		36	63
CALC.: TURBINE CO, lb/hr		31.6	57.3
GIVEN: TURBINE NOx, ppmvd @ 15%O2		25	42
CALC.: TURBINE NOx, lb/hr		36.1	62.7
CALC. GAS MOL. WT.		28.18	28.52
FLUE GAS TEMP. @ CO and SCR CATALYST, F (+/-20)		816	829
DESIGN REQUIREMENTS			
CO CATALYST CO OUT, ppmvd@15%O2		7.2	12.6
SCR CATALYST NOx OUT, ppmvd@15%O2		8.75	14.7
NH3 SLIP, ppmvd@15%O2		10	10
CO and SCR PRESSURE DROP, "WG - Max.		Nom. 4	Nom. 4
GUARANTEED PERFORMANCE DATA			
CO CATALYST CO CONVERSION, % - Min.		80.0%	80.0%
CO OUT, lb/hr - Max.		8.3	11.5
CO OUT, ppmvd@15%O2 - Max.		7.2	12.6
SO_2 -> SO_3 CONVERSION, % - Max.		38%	38%
VOC** CONVERSION, % - Min.		40%	40%
** VOC - NON-METHANE / NON-ETHANE - 50% SATURATED			
CO PRESSURE DROP, "WG - Max.			0.8
SCR CATALYST NOx CONVERSION, % - Min.		65.0%	65.0%
NOx OUT, lb/hr - Max.		12.6	21.9
NOx OUT, ppmvd@15%O2 - Max.		8.75	14.7
EXPECTED AQUEOUS NH3 (28% SOL.) FLOW, lb/hr		50.0	73.5
NH3 SLIP, ppmvd@15%O2 - Max.		10	10
SCR PRESSURE DROP, "WG - Max.			3.2

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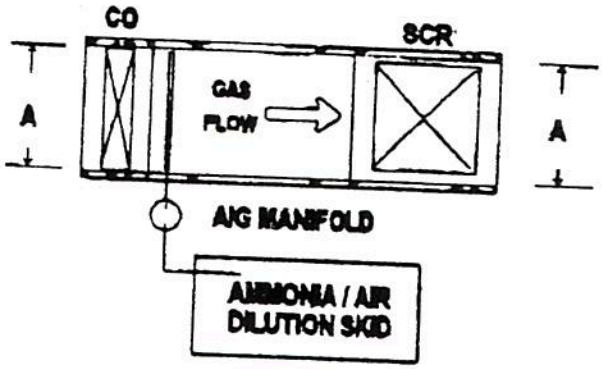
Raytheon – Allegheny Power
Simple Cycle Cycle Project
CO and SCR Catalyst Systems
Engelhard Budgetary Proposal EPB99396
April 26, 1999

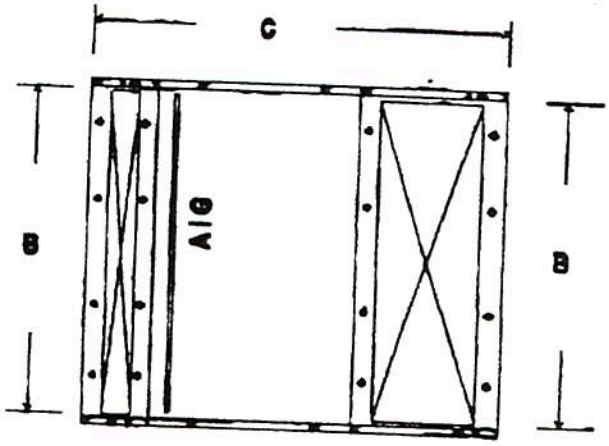
Scope of Supply: The equipment supplied is installed by others in accordance with Engelhard design and installation instructions.

Engelhard Camet® CO and NOxCAT™ VNX™ SCR catalyst in modules;
Internal support frames for catalyst modules - installed inside HRSG internally insulated casing;
Duct Section with internal insulation to house CO, AIG, and SCR;
Ammonia Delivery System Components: Aqueous (28% Sol.) Ammonia to skid
- Ammonia Injection Grid (AIG);
- AIG manifold with flow control valves ;
- NH_3/Air dilution skid: Pre-piped & wired (including all valves and fittings)
  - Two (2) dilution air fans, one for back-up purposes
  - Panel mounted system controls for:
    - Blowers (on/off/flow indicators)
    - Air/ammonia flow indicator and controller
    - System pressure indicators
    - Main power disconnect switch

Assumed Dimensions:

Inside Liner Width	(A)	27'-0"
Inside Liner Height	(B)	19'-9"
Reactor Depth - CO and SCR	(C)	15'-6"





Excluded from Scope of Supply:
Ammonia storage and pumping
Any transitions to and from reactor
Any interconnecting field piping or wiring
Electrical grounding equipment
Utilities
Foundations
All Monitors
All other items not specifically listed in Scope of Supply